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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,329	06/12/2001	John S. Eden	10010357-1	5804

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EXAMINER

WEST, JEFFREY R

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/880,329	Applicant(s) EDEN, JOHN S.	
	Examiner Jeffrey R. West	Art Unit 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,009,541 to Liu et al. in view of U.S. Patent No. 6,381,656 to Shankman.

Liu discloses an apparatus for performing an extensive diagnostic test in conjunction with a BIOS test routine comprising a diagnostic test execution engine (column 3, lines 66-67) that receives input commands from a user and initiates processing of the input commands (column 4, lines 29-49) and a test routine (column 3, lines 2-3). Liu discloses that the testing platform can concurrently include and employ user input/output components (column 3, lines 55-59), result handling components (i.e. display) (column 4, lines 38-41), computing resource components (i.e. data storage) (column 3, lines 10-13), and inherently communication components to transfer data between the I/O, display, and data storage components, adapted to the test engine and corresponding routine (column 2, lines 3-7 and 25-27).

Liu discloses that changes to the testing process entered by the user modifies the test routine performed and the corresponding steps carried out by the execution engine, thereby adapting the test routine and the execution engine to each other (column 4, lines 37-49). Liu also discloses test executor components applicable to link the test execution engine to a test routine in a common executable code that allows the test routine to be executed by the engine without any I/O linking (column 3, lines 36-45), to a separate executable in a memory of the computing environment, or to an external test routine stored in an external hard disk (column 3, lines 10-13).

Liu also discloses that the platform can handle and execute multiple test routines concurrently (column 6, lines 24-30) and includes a test sequencing component that controls the execution and order of multiple test routines in accordance with a mode component that receives and interprets user inputs as commands to call to the desired type of testing (column 3, lines 20-24 and column 4, lines 29-49).

With respect to claims 13 and 14, Liu discloses that a first mode component controls the execution of a first test mode and, upon the detection that a user desires deactivation of the first test mode, through an input command, a second mode component activates a second test mode. Liu then discloses that upon the detection that a user desires deactivation of the second test mode, through an input command, the first test mode is reactivated (column 4, lines 29-49).

Although not specifically disclosed, it is considered inherent that the invention of Liu executes the aforementioned test routines using a corresponding operating system because the invention of Liu does disclose implementing the invention within

a general purpose or specific function computer (column 2, lines 66-67) and general purpose and specific function computers require an operating system for carrying out its functions. It is also considered to be well-known in the art that general purpose computers and specific function computers are platforms that can concurrently include multiple user I/O devices (i.e. keyboard, mouse, monitor), result handing components (i.e. printers, disks, databases), computing components (i.e. operating system, processors), and communication components (i.e. busses, cables, network connections).

Further, it is noted that claim 10 recites the limitation, "may be executed". It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform and therefore does not constitute a limitation in any patentable sense. Similarly, claims 4 and 6 recite the limitation, "can concurrently employ."

As noted above, the invention of Liu teaches many of the features of the claimed invention and while the invention of Liu does teach a test routine execution method comprising receiving inputs from a user, through an input interface, and communicating over communication hardware to software routines, display/result handing components, and hardware devices, such as disk storage devices, Liu does not specifically disclose adaptation components to shield the test routine and execution engine from hardware and software dependencies.

Shankman teaches a computer input/output subsystem monitor for testing, debugging, and performance analysis using an intelligent I/O architecture (column 1,

lines 6-10) comprising a plurality of I/O processors for handling data within the system and a virtual adapter associated with each I/O processor, wherein the adapters conform to an intelligent I/O ("I₂O") architecture (column 4, lines 15-31) that adapts the monitoring execution system to the operating system with its corresponding memory management and timer interfaces (column 2, lines 20-30). Shankman also teaches that the I/O devices connected to the system through the adapters includes user I/O interfaces (column 3, lines 16-19 and column 20, lines 29-40), result handing printers (column 21, lines 51-55), target databases/disk files (column 19, lines 15-47), and communication hardware (column 15, lines 21-27)

It would have been obvious to one having ordinary skill in the art to modify the invention of Liu to include adaptation components to shield the test execution engine and test routine from component dependences, as taught by Shankman, because Liu does provide the detection and execution of specific test routines through the implementation of an interrupt signal (column 2, lines 41-45) and Shankman suggests that using an I₂O architecture offloads the interrupts generated by the I/O devices to special purpose I/O processors that have been designed to quickly service interrupts and protect the server's CPU from the performance degradations associated with I/O interrupts in the conventional personal computer architecture as well as reduced the software support burden on I/O card manufactures that have been imposed because of conventional architecture (column 2, lines 11-19). The combination also would have provided a convenient, thorough method for measuring overall computing system performance taking into account all of the devices of the

system using compatible communication in order to display to the user a clear measurement summary (column 2, lines 64-67 and column 3, lines 13-19).

Response to Arguments

3. Applicant's arguments filed December 29, 2003, have been fully considered but they are not persuasive.

Applicant argues that Liu teaches a “diagnostic routine – a[n] simple, unshielded clock block – directly accessing hardware components such as CPU registers, PCI cards, and busses” and “Liu is completely unrelated to the claimed invention. Indeed, Applicant’s testing platform can be furnished with a test routine that test particular hardware components, but Applicant’s test routine interfaces to layers of tiered, hierarchical shielding components, rather than directly to CPU registers, buses, and other computer resources within the computer-resource environment in which Applicant’s testing platform happens to be running.”

The Examiner first notes that the invention of Liu is included to teach an apparatus for performing an extensive diagnostic test in conjunction with a BIOS test routine, and is not included to teach any shielding components. Further, the Examiner asserts that the invention of Liu is not completely unrelated to the claimed invention but teaches many of the features of the claimed invention including a test routine, diagnostic test execution engine, result handling components, computing resource components, and data storage components, adapted to the test engine and corresponding routine.

Applicant then argues that “Shankman appears to be equally unrelated to the current, claimed invention” because “*Shankman’s virtual-monitor-and-I/O-monitor system is not a testing platform*” and “[t]esting involves exhaustive exercise of, or at least well-planned sampling of, the state spaces involved in running software programs and hardware devices. . . . By contrast, performance monitoring is a different area of computing. In performance monitoring statistics and data related to operation of a routine, device, or system are collected and analyzed to ascertain how the routine, device, or system operates. Performance monitoring may well be employed in testing, but is not itself testing.”

The Examiner asserts that the invention of Shankman is not unrelated to the claimed invention since performance monitoring and testing are similar and, as indicated in column 1, lines 6-10, Shankman discloses that the invention “relates to a computer input/output (“I/O”) subsystem monitor for testing, debugging and performance analysis”.

Applicant then states, “Shankman, for example, neither discloses nor suggests a test routine, or, in other words, a routine that implements an experimental test procedure, since performance monitoring involves merely passively collecting performance data. Applicant’s test platform ‘includes a core test execution engine 212 that includes a central execution loop that continuously executes in order to run one or more test routines according to various user inputs and programmed

parameters.’ Shankman, for this reason alone, neither teaches nor suggests the testing platform of claim 1.”

The Examiner maintains that, as noted above, the invention of Liu discloses a test system including a test routine and the invention of Shankman is only included to modify the invention of Liu to include adaptation components to shield the test routine and execution engine from hardware and software dependencies.

Applicant then indicates that “Shankman’s I/O monitor directly interacts with hardware devices. Moreover, Shankman’s virtual monitor directly interacts with the operating system of the I/O processor in which it runs, as clearly shown by the double arrow interconnecting the communications module of the virtual monitor 402 and the I/O processor operating system 430 in Figure 4. There is no shielding of Shankman’s virtual-monitor-and-I/O monitor system from hardware dependencies – instead, components of Shankman’s virtual-monitor-and-I/O monitor system are directly embedded into the computer system components and directly interface with them.”

The Examiner asserts that Shankman indicates that “[t]he I₂O architecture offloads the interrupts generated by I/O devices to special purpose I/O processors (“IOPs”) that have been designed to quickly service interrupts and protect the server’s CPU from the performance degradations associated with I/O interrupts in the conventional personal computer architecture” (column 2, lines 11-16) and that in an I₂O compliant architecture, such as that of Shankman, “the operating system

communicates I/O requests to an I/O subsystem that contains one or more IOPs using a series of predefined and consistently formatted messages. Accordingly, all I₂O compliant I/O devices understand the I₂O message format. Thus, the I/O subsystems in the I₂O architecture operate separately from the server's CPU" (column 2, lines 20-26). These passages indicate that the "IOPs" are components that adapt hardware and software interfaces of the resource environment to the monitoring device to shield the monitoring device from dependencies on the hardware and software interfaces of the computing resource environment. In addition, the definition provided in the Office Action mailed September 25, 2003, defines an "Intelligent Input/Output" architecture, such as the architecture of Shankman, as a "specification which aims to provide an I/O device driver architecture that is independent of both the specific device being controlled and the host operating system" (See, FOLDOC Free On-Line Dictionary of Computing, "Intelligent Input/Output"). In the section cited by Applicant, the virtual monitor 402 is connected to the operating system 430, but the operating system 430 is an operating system of the "IOP"/adapter. Therefore, Shankman does teach the claimed shielding components and is correctly combined with the invention of Liu to meet the invention as claimed.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

FOLDOC Free On-Line Dictionary of Computing defines "Intelligent Input/Output" architecture as a "specification which aims to provide an I/O device driver architecture that is independent of both the specific device being controlled and the host operating system."

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw
February 5, 2004


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800